

CLAIMS

What is claimed is:

1. A flexible circuit board assembly comprising:
a rigid circuit board having a first portion and a second portion separated by a
bending region; and
5 a plurality of grooves cut into the bending region, the grooves being cut
substantially parallel to an axis about which the bending region is bent.

2. The assembly of claim 1, wherein the rigid circuit board comprises a plurality of layers.

3. The assembly of claim 2, wherein the grooves are cut at least half way through
5 the rigid circuit board.

4. The assembly of claim 1, wherein the rigid circuit board comprises FR4 material.

10 5. The assembly of claim 1, wherein the grooves are disposed on an inside radius of the bending region.

6. The assembly of claim 1, wherein the grooves have a V-shaped profile.

15 7. The assembly of claim 1, wherein the grooves have a substantially rectangular-shaped profile.

8. The assembly of claim 1, wherein the rigid circuit board is bent at the bending region at an angle of up to one hundred eighty degrees as measured from an inside
20 surface of the rigid circuit board.

9. The assembly of claim 1, wherein the rigid circuit board includes electrical traces disposed across the bending region.

10. A flexible circuit board assembly comprising:
- a multi-layer, rigid FR4 circuit board having a first portion and a second portion separated by a bending region; and
- a plurality of grooves cut into the bending region, the grooves being cut
- 5 substantially parallel to an axis about which the bending region is bent.

11. The assembly of claim 10, wherein the grooves are cut about two-thirds of the way through the rigid circuit board.

12. The assembly of claim 10, wherein the grooves have a profile selected from
5 one of the group of a V-shape, a U-shape, and a substantially rectangular shape.

13. The assembly of claim 10, wherein the rigid circuit board is bent at the bending region at an angle of up to one hundred eighty degrees as measured from an inside surface of the rigid circuit board, and wherein the grooves are disposed on an
10 inside radius of the bending region.

14. The assembly of claim 10, wherein the rigid circuit board includes electrical traces disposed across the bending region on one of the uncut layers of the rigid circuit board.

15

15. A method for forming a flexible circuit board, the method comprising the steps of:

- providing a substantially rigid, multilayer circuit board having a first portion and a second portion separated by a bending region;
- cutting a plurality of grooves into the bending region that are substantially parallel to an axis about which the bending region is to be bent; and
- bending the rigid circuit board about the bending region.

16. The method of claim 15, wherein the providing step includes providing an FR4 rigid substrate, and wherein the cutting step includes cutting the grooves at least half way through the rigid circuit board.

17. The method of claim 15, wherein the cutting step includes milling the grooves into the substrate such that the grooves have at least one of the group of a V-shaped profile, a U-shaped profile, and a substantially rectangular shaped profile.

18. The method of claim 15, wherein the bending step includes bending the substrate such that the grooves are along an inside radius of the bending region.

19. The method of claim 15, wherein the bending step includes bending the circuit board at the bending region at an angle of up to one hundred eighty degrees as measured from an inside surface of the rigid circuit board.

20. The method of claim 15, wherein the providing step includes providing the circuit board with electrical traces disposed across the bending region.